

Collapsible towers

About a decade ago, NASA needed a means of orbiting a large radio telescope antenna. Astro Research Corp., Santa Barbara, worked on the problem and came up with a new type of structure that was strong, lightweight, folded into a small storage space, and could be erected by rotation.

Later the firm adapted the technology to commercial use. Today, the "Astromast" tower consists of tubular aluminum alloy and stainless steel members that deploy into small three-sided bays. Each of these are made rigid by six diagonal cables. All joints are flexible to permit folding and unfolding.

The tower packs into a container only 5% of its height. It can be erected without tools and, of course, is reusable. The collapsible column has won a "Design of the Year" award from *Machine Design*. Depending on the accessories ordered, a 100-foot tower costs from \$4,000 to \$15,000.

The columns are used to hold stage lights and speakers for outdoor concerts, as antenna towers for radio communications by oil pipeline and forest-fire crews, and as a transportable site-survey system for permanent radar beacons. The Federal Aviation Administration is using the towers in this last application. Each site now can be tested for interference with an actual radar system prior to permanent construction.

Variations of the "Astromast" being considered include portable emergency bridges and commercial scaffolding.

A spinoff from a space satellite antenna, this lightweight versatile tower arrives on the scene in condensed package, below. To "unpack" the tower, you simply rotate each three-sided bay into its vertical open position and lock a diagonal cable latch until it is fully extended (left).

